A survey of mammals on Hinchinbrook Island North Queensland

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ABSTRACT

A mammal trapping programme was conducted on Hinchinbrook Island between 13 December, 1985, and 11 January, 1986, for the Australian New Zealand Scientific Exploration Society (ANZSES). A total of 59 individual mammals were trapped, representing 10 species. Incidental sightings brought the total species recorded to 14. As well as confirming the presence of previously recorded mammals, the trapping programme recorded seven new mammals for the island.

Introduction

Relatively little work has been done on the mammal fauna of Hinchinbrook Island. There have only been two mammal trapping programmes previous to the one presented here, but records are only available from one carried out in 1984 by the Queensland Museum, the Queensland Institute of Medical Research and the Australian Army (Fanning and Cook 1984). There has been a fauna survey of the nearby Ingham district (Lavery and Grimes 1974), and it is probable that the faunal assemblage of Hinchinbrook Island is similar. The island's flora and non-mammalian fauna have been surveyed by the Queensland Naturalists' Club (Alcorn 1978; Jahnke 1978; Marks 1978; Monteith 1978; Pearson and Reeves 1978; Reeves 1978; Sharpe 1978; Tracey and Webb 1978a; Tracey and Webb 1978b; Cribb 1983; Hockings 1983; Leggett 1983; Marks 1983; Pearson 1983; Popple 1983).

The aim of this study was to contribute new information on the composition and distribution of the mammalian fauna.

Study Area and Methods

The relatively untouched Hinchinbrook Island is the largest island national park in the southern hemisphere, measuring approximately 36 km in length and 16 km at its widest point. It is approximately 8 km off Cardwell and approximately 1 500 km north of Brisbane. The island is mountainous with the highest peak, Mt Bowen, at 1 100 m. It is a continental island and is separated from the mainland by the deep Hinchinbrook channel some 8 km wide. This sheltered channel supports extensive forests of mangroves. The east coast is open to the Coral Sea with beaches, steep rocky coastline with dry scrub on the slopes and some rainforest in low lying sheltered areas. Missionary Bay in the north-east supports extensive mangrove forests along the shoreline.

Five different vegetation types were covered in this trapping programme:

(1) Coastal beach ridges and swales;
(2) Mesophyll vineforest (Rainforest);
(3) Closed forest with sclerophyll emergents and codominants;
(4) Grassland;
(5) Medium open forests and woodlands.

Description of vegetation follows that of Tracey and Webb (1978a).

A total of 1 107 trap nights were conducted on the island over an 18-day period. Five methods of tapping were used to sample the small mammal fauna:

1. Fifty folding aluminium box traps (Elliott traps) 8×10×33 cm, baited with a mixture of peanut butter, rolled oats and peanut oil.
2. Two wire cage traps approximately 20×20×50 cm, baited with the peanut butter mixture as in 1.
3. Pitfall traps consisting of four plastic buckets 70 cm deep by 35 cm in diamater. A 10 m×35 cm drift fence of fibreglass fly wire was pegged across the buckets.
4. Mist netting using a standard sized mist net 10 m in length.
5. A collapsible bat trap (harp trap) of the type described by Tideman and Woodside (1978).

The Elliott and wire cage traps were placed approximately 10 m apart in either survey lines (5-10 traps per line), or grids of 5×5 or 5×10 traps. Buckets in the pitfall line were placed 2.5 m apart in a single survey line. The mist net (used to survey bats) and harptrap were set across creeks and openings in the forest.

Trapping was carried out at four sites (Table 1).

Table 1: Trapping sites on Hinchinbrook Island National Park.

Locality	Dates Trapped	Number of Trap Nights
Georges Point (Site 1)		
146 19 E	13 Dec-14 Dec 1985	
18 29 S	19 Dec-20 Dec 1985	106
Gayundah Creek (Site 2)		
146 12 E		
18 24 S	22 Dec-28 Dec 1985	371
Bowen Creek (Site 3)		
146 12 E		
18 19 S	31 Dec-1 Jan 1986	124
Scraggy Point (Site 4)		
146 08 E		
18 18 S	3 Jan-11 Jan 1986	506

Georges Point (Site 1):

Tracey and Webb (1978a) classified the vegetation as coastal beach ridges and swales. Casuarinas dominated the foredune with medium open forests on older dunes. Paperbarks mainly dominated the swales, where swamps form during the wet season.

Trapping was carried out across the dune system and consisted in the first instance of 19 Elliott traps and two wire cage traps in four survey lines for two nights. In the second instance, 25 Elliott traps, two cage traps, four pitfall buckets and one harp trap were set in five survey lines for two nights.

Gayundah Creek (Site 2):

Gayundah Creek is one of the major creeks draining Mt Bowen on the western side of the island. Gayundah Creek flows through rainforest, then through an extensive mangrove forest at its mouth.

Two areas were trapped. The first located in mesophyll vineforest, had previously been trapped in 1984 (Fanning and Cook 1984). A total of 50 Elliott traps, two wire cage traps and a pitfall line of four buckets were set in six survey lines for three consecutive nights. On the fourth day, 20 of the Elliotts and one of the wire cage traps were relocated (the remaining traps were set for a further three nights) to an area 0.5 km south-west of the first, and set in grassland fringed by paperbarks and mangroves for four consecutive nights. This area was not trapped in 1984. The mist net and harp trap were set across Gayundah Creek for seven consecutive nights.

Bowen Creek (Site 3):

Located on the eastern side of the island, Bowen Creek flows into Missionary Bay. It is a large creek lined with an extensive forest of mangroves. The trapping site was located approximately 4 km upstream above the influence of high tide. The vegetation, as described by Tracey and Webb (1978a), consisted of closed forest with sclerophyll emergents and codominants upstream, and medium open forests and medium woodland nearer the coast.

Two consecutive nights of trapping occurred at this site. The mist net and harp trap were set in closed forest, and 50 Elliott, two wire cage traps and a pitline of two buckets were set in the woodland.

Scraggy Point (Site 4):

Scraggy Point is located on the north-west coast. 10 km south-east of the mainland town of Cardwell. The vegetation consisted of beach ridges and swales, with medium open forest and woodland developing on hill slopes.

Three trapping grids were set. Two 5×5 grids of 25 Elliotts and one wire cage trap each, together with a pitline of four buckets, were set in the beach ridges and swales located 0.5 km north-west of Scraggy Point camping ground, for five consecutive nights.

Table 2: List of mammals recorded for Hinchinbrook Island.

Species	Fanning and Cook (1984) (Gayundah Creek)	ANZSES 85/86 Site 1	2	3	4	Coastal Waters
Order: POLYPROTODONTA						
Family: Peramelidae						
Perameles nasuta Long-nosed Bandicoot	×	×		×	×	
Order: DIPROTODONTA						
Family: Macropodidae						
Macropus agilis Agile Wallaby					×	
Order: CHIROPTERA						
Family: Pteropodidae						
Pteropus sp. Flying-fox					×	
Nyctimene robinsoni Queensland Tube-nosed Bat	×				×	
Syconycteris australis Queensland Blossom-bat	×				×	
Family: Rhinolophidae						
Hipposideros diadema Diadem Horshoe-bat	×			×		
Family: Vespertilionidae					×	
Nyctophilus bifax North Queensland Long-eared Bat					×	
Miniopterus schriebersii blepotis Common Bent-wing Bat	×					
Miniopterus australis australis Little Bent-wing Bat	×					
Myotis adversus Large-footed Mouse-eared Bat			×			
Order: RODENTIA						
Family: Muridae						
Hydromys Chrysogaster Water-rat				×		
Uromys caudimaculatus White-tailed Rat	×	×				
Melomys cervinipes Fawn-footed Melomys	×		×			
Melomys burtoni Grassland Melomys			×		×	
Rattus fuscipes Bush Rat	×	×	×	×	×	
Order: CARNIVORA						
Family: Canidae						
Canis familiaris dingo Dingo	×					
Order: SIRENIA						
Family: Dugongidae						
Dugong dugon Dugong						×

The third grid, consisting of 50 Elliotts and two wire cage traps in a 5×10 configuration, were set in medium open forest and woodland, 0.5 km south-east of Scraggy Point camping ground for four consecutive nights.

The mist net and harp trap were set for nine consecutive nights in the beach ridge and swale vegetation complex and mosaic.

All mammals trapped were weighed, measured (forearm length for bats, head-body length for murids), sexed and released at point of capture. Specimens of uncertain identification were retained and deposited with the Queensland Museum for positive identification.

A few other non-target animals such as insects, frogs, reptiles and birds were also collected, identified by and lodged with the Queensland Museum.

Results

Fifty-nine individuals representing 10 species of mammals were trapped. Incidental sightings brought the total species recorded to 14, including *Dugong dugon* (Dugong) in the waters of Hinchinbrook Channel and Missionary Bay, *Macropus agilis* (Agile Wallaby) and *Pteropus* sp. (Flying-fox) at Scraggy Point, and *Hydromys chrysogaster* (Water-rat) in mangrove forest at Bowen Creek (Table 2).

Trapping resulted in new records of *Nyctophilus bifax* (North Queensland Long-eared Bat, originally identified as *N. gouldi), Myotis adversus* (Large-footed Mouse-eared Bat) and *Melomys burtoni* (Grassland Melomys). One specimen of *N. bifax* was trapped in the harp trap at Scraggy Point. Two *M. adversus* were trapped in the mist net over Gayundah Creek. A total of four specimens of *M. Burtoni* were trapped — one female at Gayundah Creek and two males, one female at Scraggy Point.

The incidental sighting of *M. agilis* occurred in woodland at Scraggy Point. Macropod tracks, however, were commonly seen at Georges Point and many of the beaches around the island, notably Zoe Bay on the east coast.

One *Perameles nasuta* (Long-nosed Bandicoot) was caught at Georges Point. Two others were observed at dusk, one at Bowen Creek and one at the camping ground at Scraggy Point.

Three males and one female *Nyctimene robinsoni* (Queensland Tube-nosed bat) and four male *Syconycteris australis* (Queensland Blossom-bat) were caught in the mist net set across the beach at Scraggy Point. A single female *Hipposidesos diadema* (Diadem Horseshoe-bat) was caught in the mist net over a dry creek bed in closed forest at the Bowen Creek site.

Two female *Uromys caudimaculatus* (White-tailed Rat) were caught in cage traps at Georges Point. A pair of *Melomys cervinipes* (Fawn-footed Melomys) were caught at Gayundah Creek. The most frequently caught mammal was *Rattus fuscipes* (Bush Rat). A total of 24 males and 14 females were caught. Captures of *R. fuscipes* occurred at each of the four trapping sites.

Discussion

This study was successful in recording seven new species of mammals for Hinchinbrook Island. The only other mammal survey of the island for which records are available, found 10 species of mammals (Fanning and Cook 1984). This gives a total of 17 species of mammals recorded for Hinchinbrook Island (Table 2).

The sighting of *M. agilis* at Scraggy Point is not surprising, as it is the most common macropod in coastal northern Queensland. Lavery and Grimes (1974) record *M. agilis* in the Ingham district as abundant in open forest.

It was difficult to identify the *Pteropus* sp. sighted at Scraggy Point, due to the poor visibility. However, Lavery and Grimes (1974) recorded three species of Flying-foxes, namely *P. scapulatus, P. alecto* and *P. conspicillatus*. It is quite likely that at least one if not all three inhabit Hinchinbrook Island or at least visit.

The capture of a female *H. diadema* at Bowen Creek is of significance because it is near the southern limit of its distribution. Fanning and Cook (1984) recorded *H. diadema* for Gayundah Creek, which is slightly further south than that recorded here. Lavery and Grimes (1974) recorded *H. diadema* in their survey of the Ingham district as uncommon in closed forest.

Hinchinbrook Island is expected to have a more diverse Chiropteran fauna than this study has recorded. Les Hall (pers. comm.) expects there to be 15 to 20 species of bats resident or visiting the island.

As a group the Chiroptera were the most generically diverse faunal element recorded, yet they were the least trapped. This was probably due to a number of factors such as type and number of traps, position of traps and density of animals in the area. Difficulty was encountered in finding suitable locations within the rainforest to position the harp trap and the mist net. Flight paths in the mid-stratum of the rainforest were few. Potential flight paths seemed to be in the upper-stratum, however it was difficult to access. O'Neill and Taylor (1986) showed that flight patterns of various species of bats differ and can be related to their foraging behaviour.

Different species of bats utilize the different strata in the vegetation, not always flying down openings in the forest such as paths and creeks. Trapping for bats during this study took place in river beds and forest openings. This may have limited our potential for capturing further species of bats.

The murids were the next most diverse group of mammals, with *R. fuscipes* making up the majority of captures. Lavery and Grimes (1974) recorded 10 species of murids for the Ingham district, compared with five species recorded in this study. It is possible that Hinchinbrook Island may not support as many species of murids as the adjacent mainland.

No Dasyurids were captured. This does not necessarily indicate their absence from the island, but could be a result of insufficient trapping in suitable habitat, low densities, trap shyness or trapping at the wrong time of year. Lavery and Grimes (1974) recorded five species of dasyurid for the Ingham district, noting that their frequency was low. Suitable habitat exists on Hinchinbrook Island for this group and there does not seem to be any reason why dasyurids should not be present on the island.

Fanning and Cook (1984) recorded *Miniopterus schreibersii blepotis* (Common Bent-wing Bat) and *Canis familiaris dingo* (Dingo) in their survey of

Gayundah Creek. This survey failed to record these two species.

Great potential exists for further mammal records to be made for Hinchinbrook Island. This unique national park has a diverse fauna which requires further study.

Acknowledgements

I wish to thank the following people for their assistance in this study and the preparation of the manuscript:

The mammal group: David Robson, Dave Morris, Elaine Crozier, Andrea Saveneh, Toby Evans, Dave Eggington and Evizel Seymore.

Peter White, the chief leader, who gave us all inspiration and organized everything to perfection.

ANZSES, for their support of young scientists and young people in general.

The staff of the Queensland Museum (especially Steve Van Dyke — Mammals) who identified and confirmed the identity of specimens collected.

Les Hall and Ian Fanning for suggesting projects to be carried out.

Graeme George who read the manuscript and made constructive suggestions.

La Trobe University for supplying the Elliot and collapsible bat traps — in particular Peter Rawlinson and Richard Zann.

Arthur Rylah Institute (Ministry for Conservation, Forests and Lands, Victoria) for supplying the cage traps.

Queensland National Parks and Wildlife Service for permission to conduct field work on Hinchinbrook.

Judith Tomlin for word processing the manuscript.

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